

RESUME OF DR JEREMY DUNCAN PRINCE

PERSONAL DETAILS

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QUALIFICATIONS:

Tertiary:- Murdoch University, Western Australia 1976 - 1979. Bachelor of Science with First Class Honours in Biology conferred February 1980.

Postgraduate:- University of Tasmania, Tasmania, Australia. 1984 -1989. Doctoral thesis submitted March 1989. Conferred April 1990. Topic: The fisheries biology of *Haliotis rubra* in Tasmanian waters.

March 2002. Adjunct Associate Professor of Murdoch University, WA.

PROFESSIONAL REFEREES:

Professor Carl Walters
 Fisheries Centre, University of British Columbia, Vancouver, BC, Canada
 Phone: (604) 822 6320, Mob: (614) 308 480, e-mail: c.walters@fisheries.ubc.ca

Professor Ray Hilborn,
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SYNOPSIS:

Dr Prince is internationally recognized for his practical expertise in fisheries ecology, the use of fisher lore, and the assessment and management of small scale, data-poor fisheries. Interests developed initially through doctoral studies on abalone fisheries, and culminating recently in a breakthrough in cost-effective small-scale fisheries assessment and management. A breakthrough acknowledged by Dr Keith Sainsbury of the University of Tasmania and Marine Stewardship Council, and by the David and Lucille Packard Foundation as a 'global game-changer'. A breakthrough which a two-day peer review workshop convened at the University of British Columbia in March 2015 seven with leading international experts in the field concluded has the potential to impact the previously un-assessable 90% of the world's fisheries and, is the assessment tool needed to directly address the issue of food security in fisheries.

Completed in 1989, Dr Prince's doctoral thesis on the abalone (*Haliotid*) fisheries of Australia was one of the first studies to document the inapplicability of established assessment and management

techniques for small-scale and spatially complex fisheries, and to define what has, in the intervening years, become recognized as one of the great global challenges confronting marine coastal conservation (Andrew *et al.* 2007, Costello *et al.* 2012, Pauly 2013). In the intervening years developing techniques for assessing and providing scientifically rigorous management advice for small scale and spatially complex fisheries has become recognized as one of the major global challenges to providing food security for developing world coastal communities and to conserving coastal biodiversity. A challenge that is now solvable with Dr Prince's recent breakthrough.

At the time one of Dr Prince's doctoral referees, Professor Carl Walters of the University of British Columbia, wrote:

“Over some 20 years as a university faculty member, I have read about 60 doctoral dissertations. I have simply one conclusion: this is one of the best thesis that I have seen, or hope to see, in the field of fisheries ecology. I hope that he will hurry to publish it as a book and I assure you that this book will have a major impact on fisheries thinking around the world.”

Dr Prince's career has been built on the application of fisher knowledge to fisheries research, management and monitoring. In the early years of his career this included working with the motivation and understanding of commercial abalone divers in southern Australia and New Zealand to implement assessment and management for individual reefs within regionally managed abalone fisheries, and designing structured stock survey programs for shark fishermen to incorporate into normal fishing practices. The knowledge gained from his ability to assimilate knowledge through his relationship with fishing communities has gained him recognition in Australia as a 'systems thinker' leading him to work on projects including the ecosystem modeling of the Commonwealth Australian fisheries of the Tasman Sea, and the conservation of deepwater dogfish populations within that system.

As a fisheries assessment and management consultant in Australia his roles for the Australian Commonwealth Government and fishing industry included:

- Chairman of the Southern Shark Assessment Group
- Chairman of the Deepwater Assessment Group
- Scientific Member on the South East Management Advisory Committee
- Scientific Liaison for the South East Coast Trawl Industry Association
- Scientific Liaison for the East Coast Tuna and Billfish Fishery
- Sustainability Science Advisor to the South Seas Pearl Culture Industry

Internationally he has become known for his ideas on re-scaling fisheries assessment and management using 'Barefoot Ecologists' or 'agents of change' to empower fishers to monitor, assess and managing their own fisheries resources (Prince 2003). And for his ideas for developing a Barefoot Ecologist's Toolbox with the aim of enabling communities and individuals to conduct their own small scale scientific processes in order to manage their own local resources. Ideas which have become central to the management of small scale coastal fisheries in many countries, including Chile (Gonzalez *et al.* 2006; Ernst *et al.* 2010) and Galicia (Macho *et al.* 2013).

Returning to the problem he had announced through his doctoral studies, in 2001 Dr Prince began training Australian abalone divers to visually assess the reproductive potential of the abalone they were leaving behind, and initiated a reform process for that fishery that continues today (Prince *et*

al. 2008). Spurred on by a challenge thrown down by a journal editor, to expand the application of those principals, Dr Prince went on to develop a methodology that can be used to quantitatively assess the reproductive potential (Spawning Potential Ratio) of any marine species. Published in 2015 as three papers in ICES Journal of Marine Science and two papers in the Journal of Fisheries Research, this breakthrough has great potential to reduce the cost of assessing fish stocks from \$US100,000s - 1,000,000s per annum (Pauly 2013) down to just \$US100s - \$10,000s, turning stock assessment into a process that fishing communities can do for themselves, and in the process fully understand their need for fisheries management. For example, in Sri Lanka a local partner is conducting annual assessments of *Portunus pelagicus* for just \$US400.

Since 2012 Dr Prince's work has been mainly funded by the Western Pacific Program of The David and Lucille Packard Foundation and focused on working with communities and fisheries agencies in Palau, Papua New Guinea, Solomon Islands and Fiji, to assess their coral reef fish and implement simple forms of sustainable management. Dr Prince is also currently working with NGO and government partners implementing his new approach in Sri Lanka, Indonesia, Chile, Mexico and California, and with industry and government partners in. Independently of Dr Prince implementations of the new LBSPR approach are also underway in Peru, Sweden, Philippines, Thailand and Vietnam.

See these URLs for articles on the LB-SPR technique and the Palauan project:

<http://blog.nature.org/science/2015/02/16/heather-tallis-ngo-academic-applied-science-innovation-university/>

<http://blog.nature.org/science/2013/10/24/data-poor-resource-poor-fisheries-fish-stock-palau/>

<http://newswatch.nationalgeographic.com/2013/11/05/fishermen-in-palau-take-on-role-of-scientist-to-save-their-fishery/#.UnlZmyoXStg.twitter>

SUPPORTING REFERENCES:

Costello, C., Ovando, D., Hilborn, R., Gaines, S.D., Deschenes, O., Lester, S.E. (2012). Status and solutions for the world's unassessed fisheries. *Sci.*, 338: 517-520.

Ernst, B., Manriquez, P., Oresanz, J.M., Roa, R., Chamorro, J., Parada, C. (2010). Strengthening of a traditional territorial tenure system through protagonism in monitoring activities by lobster fishermen from the Juan Fernandez Islands, Chile. *Bull. Mar. Sci.* 86: 315-338.

Hilborn, R. & Walters, C.J. (1992). *Quantitative fisheries stock assessment: choice, dynamics and uncertainty*. Chapman and Hall, New York. 570p.

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- Gonzalez, J., Stotz, W., Garrido, J., Orensanz, J.M., Parma, A.M., Zuleta, A. (2006). The Chilean TURF system: how is it performing in the case of the loco fishery. *Bull. Mar. Sci.* 78: 499-527.
- Macho, G., Naya, I., Freire, J., Villasante, S., Molares, J. (2013). The key role of the Barefoot Fisheries Advisors in the co-managed TURF system of Galicia (NW Spain). *Ambio* 42: 1057-1069 doi 10.1007/s13280-013-0460-0
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- Swearer, S.E., Shima, J.S., Hellberg, M.E., Thorrold, S.R., Jones, G.P., Robertson, D.R., Morgan, S.G., Selkoe, K.A., Ruiz, G.M., Warner, R.R. (2002). Evidence of self-recruitment in demersal marine populations. *Bull. Mar. Sci.* 70. Suppl. 251-271.

FUNDED INVITATIONS TO SPEAK AT INTERNATIONAL CONFERENCES:

- 2nd Regional Asian Blue Swimmer Crab Conference, 28-29 July, 2016 Bangkok. Assessment of Blue Swimmer Crabs with the Length Based SPR technique (LB-SPR).
- Bevan Series Lecture. School of Fisheries, University of Washington, Seattle, USA: Climate, Ecology and Fisheries for invertebrates. 21-22 April, 2016. Lobo, loco and good wine: The solution to S-Fisheries.
- 1st Regional Asian Blue Swimmer Crab Conference, 16-17 November, 2015 Bangkok. Moving beyond traditional stock assessment methods.
- Workshop on Cross-sectoral perspectives on the Indonesian Blue Swimming Crab Fishery. Jakarta, Indonesia. 5-6 May, 2015. Blue swimmer crab fisheries biology.

- GAP2 Connecting Science Society and Policy. International Symposium on Participatory Research and Co-management in Fisheries. Barcelona, Spain. 24-26 February 2015. A Tail of hope: From commercial fisheries to size based community management ... and back again.
- GAP2 Connecting Science Society and Policy. The Second Fishery-Dependent Information Symposium, Rome 3-6 March 2014. The Barefoot Ecologist's Toolbox.
- ICES World Conference on Stock Assessment Methods for Sustainable Fisheries. Boston, USA, 15-19th July 2013. (1) Extending the principal of Beverton-Holt Life History Invariants for length based assessment of SPR. (2) Implementing the Risk catch Cost Framework for Data Poor Fisheries. (3) Data-poor stock assessment in Palau.
- IMACS – USAID International Symposium on data-poor fisheries assessment and management. Jakarta 16 September, 2011. Data-poor fisheries assessment and management.
- Fourth International Symposium on Stock Enhancement and Sea Ranching. Shanghai China 21-23 April, 2011. Cost-benefit analysis of alternative techniques for rehabilitating abalone reefs depleted by Abalone Viral Ganglioneuritis.
- Invertebrate Fisheries Symposium: American Fisheries Society Pittsburgh September 2010. The tyranny of scale and micro-management of invertebrate fisheries.
- Managing Data-Poor Fisheries: Case Studies, Models and Solutions Workshop. University of California Sea Grant Extension Program and California Department of Fish and Game, Berkley, CA, USA December 2008. Managing Data Poor Fisheries: Solutions from Around the World.
- Mote International Symposium on The Spatial Dimensions of Fisheries. Florida State University, Mote Marine Laboratory, Sarasota, Florida. November 2008. Re-scaling fisheries assessment and management: access privileges, responsibilities and toolboxes.
- Bevan Series Lecture. School of Fisheries, University of Washington, Seattle, USA. 19-22 February 2008. The Barefoot Ecologist's Toolbox - Re-scaling fisheries assessment and management.

Workshop on the Barefoot Ecologist's Toolbox. University La Coruna, Galicia, Spain.

November 2007. The Barefoot Ecologist's Toolbox.

Second International Symposium on Stock Enhancement and Sea Ranching. Kobe, Japan.

January 2002. The decline of global abalone (Genus *Haliotid*) production in the late twentieth century: is there a future?

Workshop on the Scientific & Technical Basis for the Sustainability of Fisheries. Rosenstiel School of marine & Atmospheric Science, University of Miami. Miami, USA November 2001. Combating the tyranny of scale for haliotids: Micro-management for micro-stocks.

Workshop on the Assessment and Management of Benthic Resources – Towards Implementation of a TURF System in Chile. Valparaiso, Chile. September 1999. Managing Localised Marine Resources: A User's Guide to Making TURF Work!

PUBLICATIONS (REFEREED SCIENTIFIC JOURNALS): **41**

Campbell, R.A., J.D. Prince, C.R. Davies, N.A. Dowling, and D.S. Kolody. 2017. An Empirical Decision Tree–Based Harvest Strategy for in-Country Management of a Shared Pelagic Resource. In: T.J. Quinn II, J.L. Armstrong, M.R. Baker, J. Heifetz, and D. Witherell (eds.), *Assessing and Managing Data-Limited Fish Stocks*. Alaska Sea Grant, University of Alaska Fairbanks. <https://doi.org/10.4027/amdlfs.2016.10>

Dowling, N.A., J.R. Wilson, M.B. Rudd, E.A. Babcock, M. Caillaux, J. Cope, D. Dougherty, R. Fujita, T. Gedamke, M. Gleason, N. Gutierrez, A. Hordyk, G.W. Maina, P.J. Mous, D. Ovando, A.M. Parma, J. Prince, C. Revenga, J. Rude, C. Szuwalski, S. Valencia, and S. Victor. 2016. FishPath: A Decision Support System for Assessing and Managing Data- and Capacity- Limited Fisheries. In: T.J. Quinn II, J.L. Armstrong, M.R. Baker, J. Heifetz, and D. Witherell (eds.), *Assessing and Managing Data-Limited Fish Stocks*. Alaska Sea Grant, University of Alaska Fairbanks. <http://doi.org/10.4027/amdlfs.2016.03>

Ward, T.J., Booth, D.J., Fairweather, P.G., Ford, J.R., Jenkins, G.I., Keough, M.J., Prince, J.D, Smyth, C. 2016. Australia's coastal fisheries and farmed seafood: an ecological basis for determining sustainability. *Aust. Zool.* DOI: <http://dx.doi.org/10.7882/AZ.2016.016>

- Hordyk, A., Ono, K., Prince, J.D., Walters C. 2016. A simple length-structured model based on life history ratios and incorporating size-dependent selectivity: application to spawning potential ratios for data-poor stocks. *Can. J. Fish. Aquat. Sci.* 73(12): 1787-1799, <https://doi.org/10.1139/cjfas-2015-0422>
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- Hordyk, A., Loneragan, N., Prince, J.D. 2015. An evaluation of an iterative harvest strategy for data-poor fisheries using the length-based spawning potential ratio assessment methodology. *Fish. Res.* 171: 20-32.
<http://dx.doi.org/10.1016/j.fishres.2014.12.018>
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- Hordyk, A., Ono, K., Valencia, S.V., Loneragan, N., Prince, J.D. 2015. A novel length-based estimation method of spawning potential ratio (SPR), and tests of its performance, for small-scale, data-poor fisheries. *ICES J. Mar. Sci.* doi:10.1093/icesjms/fsu004
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- Prince J. D. (2010) Rescaling fisheries assessment and management: a generic approach, access rights, change agents, and toolboxes. *Bull. Mar. Sci.* 86 (2): 197-219.
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- Prince J.D. (2004) The decline of global abalone (Genus *Haliotid*) production in the late twentieth century: is there a future? In *Stock Enhancement and Sea Ranching: Developments, Pitfalls & Opportunities*. Edited by K.M. Leber, S. Kitada, H.L. Blankenship, T. Svasand Blackwells Publishing Ltd. Chapter 31, pp 427-443.
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